

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-26 (Canceled):

Claim 27 (Currently Amended): Process for depositing, by electron cyclotron resonance plasma, a web of carbon[[s]] nanofibres or nanotubes onto a substrate without any catalyst, comprising:

injecting ~~by injection of~~ a microwave power into a deposition chamber ~~comprising~~ having a magnetic structure with a ~~highly~~ an unbalanced magnetic mirror and at least one electron cyclotron resonance zone within an interior of the deposition chamber itself and opposite the substrate;

inducing, in which, under a pressure less than or equal to 10^{-4} mbar, at least one of ionization and dissociation of a gas containing carbon ~~is induced~~ in the magnetic mirror in a center of the deposition chamber[[,]]; and thus

producing species that deposit on the substrate, which is heated.

Claim 28 (Currently Amended): Process according to claim 27, comprising the following steps:

heating the substrate;

establishing a said pressure less than or equal to 10^{-4} mbar of a gas containing carbon;

injecting the microwave power, and creating the plasma from the gas containing carbon, for a value of the magnetic field corresponding to the electron cyclotron resonance;

creating a potential between the plasma and the substrate;

at least one of dissociating and ionizing molecules in the magnetic mirror at the center of the deposition chamber; and

depositing the species formed on the substrate in order to obtain a web of carbon nanofibres or nanotubes.

Claim 29 (Currently Amended): Process according to claim 28, in which the steps of heating, establishing, injecting, creating, at least one of dissociating and ionizing, and depositing are carried out simultaneously.

Claim 30 (Currently Amended): Process according to claim 27, in which the deposited carbon is a graphite type carbon with a minority proportion of sp^3 bonds and a majority proportion of sp^2 bonds.

Claim 31 (Previously Presented): Process according to claim 27, in which the structure of the magnetic mirror is such that a magnetic field is maximum (B_{max}) at microwave injection, the magnetic field is minimum (B_{min}) at the center of the deposition chamber, and the magnetic field increases on the substrate ($B_{substrate}$).

Claim 32 (Previously Presented): Process according to claim 27, in which a mirror ratio upstream at the microwave injection, defined by $r_1 = B_{max} \text{ (in Gauss)} / B_{min} \text{ (in Gauss)}$, is greater than 4.

Claim 33 (Previously Presented): Process according to claim 27, in which a mirror ratio, downstream towards the substrate, defined by $r_2 = B_{substrate} \text{ (in Gauss)} / B_{min} \text{ (in Gauss)}$, is greater than or equal to 1.5.

Claim 34 (Previously Presented): Process according to claim 27, in which the substrate is heated to a temperature of 500 °C to 750 °C.

Claim 35 (Previously Presented): Process according to claim 27, in which the pressure is less than or equal to 8×10^{-5} mbar.

Claim 36 (Currently Amended): Process according to claim 27, in which the gas containing gas carbon is chosen from methane, ethane, ethylene, acetylene, and their mixtures, possibly supplemented with hydrogen.

Claim 37 (Previously Presented): Process according to claim 27, in which the heating of the substrate is achieved by electron bombardment or external heating.

Claim 38 (Previously Presented): Process according to claim 27, in which the injection of the microwave power takes place at a frequency of 2.45 GHz.

Claim 39 (Currently Amended): Process according to claim 27, in which the substrate is positively polarized, ~~preferably from +20 volts to +100 volts~~, and the plasma is connected to a ~~frame~~ an electrical ground.

Claim 40 (Currently Amended): Process according to claim 27, in which the plasma is negatively polarized, preferably from -20 to -100 volts, and the substrate is connected to a ~~frame~~ an electrical ground.

Claim 41 (Withdrawn): Device for depositing, by electron cyclotron resonance (ECR) plasma, films of carbon nanofibre webs onto a substrate without a catalyst, the device comprising:

a deposition chamber;

means for creating a magnetic structure with a strongly unbalanced magnetic mirror in the deposition chamber;

an electron cyclotron resonance zone within an interior of the deposition chamber and opposite the substrate;

means for injecting a microwave power into the deposition chamber; and

means for creating a pressure less than 10^{-4} mbar of a gas containing carbon within the interior of the deposition chamber.

Claim 42 (Withdrawn): Device according to claim 41, further comprising means for heating the substrate.

Claim 43 (Withdrawn): Device according to claim 41, further comprising means for creating a potential difference between the plasma and the substrate.

Claim 44 (Withdrawn): Film, which may be on the substrate, formed of a web or network of interconnected carbon nanofibres or nanotubes, like a spider's web, the film being free of any catalyst.

Claim 45 (Withdrawn): Film according to claim 44, in which the carbon is a graphite type carbon with a minority proportion of sp^3 bonds and a majority proportion of sp^2 bonds.

Claim 46 (Withdrawn): Film according to claim 44, in which the web or network has an average mesh size of from one or several tens of nm to one or several hundreds of nm, preferably from 20 to 200 nm.

Claim 47 (Withdrawn): Film according to claim 44, in which the average diameter of the nanofibres or nanotubes is from one or several nm to one or several tens of nm, preferably from 1 to 100 nm.

Claim 48 (Withdrawn): Structure with several layers - or multi-layer structures - comprising at least two layers of carbon nanofibre or nanotube webs according to claim 44.

Claim 49 (Withdrawn): Filter comprising at least one film according to claim 44, which may be on a substrate.

Claim 50 (Withdrawn): Filter according to claim 49, in which the film is spread out over a rigid grid with larger mesh size.

Claim 51 (Withdrawn): Electron accelerating or decelerating nanogrid comprising at least one film according to claim 44.

Claim 52 (Withdrawn): Flat screen, in particular with large dimensions, comprising a film according to claim 44, which may be on a substrate.

Claim 53 (Withdrawn): Filter comprising at least one multi-layer structure according to claim 48, which may be on a substrate.

Claim 54 (Withdrawn): Filter according to claim 53, in which the multi-layer structure is spread out over a rigid grid with larger mesh size.

Claim 55 (Withdrawn): Electron accelerating or decelerating nanogrid comprising at least one multi-layer structure according to claim 48.

Claim 56 (Withdrawn): Flat screen, in particular with large dimensions, comprising at least one multi-layer structure according to claim 48, which may be on a substrate.

Claim 57 (New): Process according to claim 39, wherein said substrate is positively polarized from +20 volts to +100 volts.

Claim 58 (New): Process according to claim 40, wherein said plasma is negatively polarized from -20 volts to -100 volts.

Claim 59 (New): Process according to claim 27, wherein said unbalanced magnetic mirror is configured to trap ions and electrons in the center of the deposition chamber.